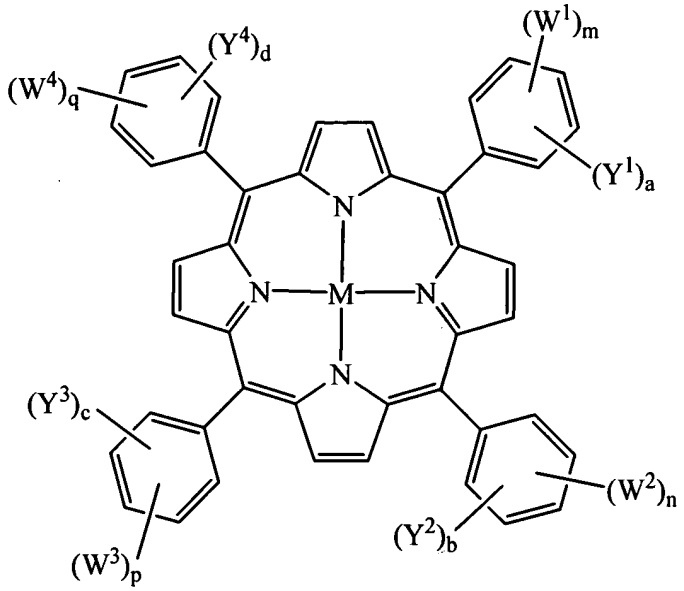
IN THE CLAIMS:

This listing of claims replaces all prior versions, and listings, of claims in the application.

Listing of the Claims

1. (Currently Amended) A compound of the formula



(1)

wherein:

Y^1, Y^2, Y^3, and Y^4, are independently on the ortho, meta or para position on the phenyl rings, and are independently hydrogen, alkyl, cycloalkyl, aryl, alkylaryl, arylalkyl, heteroaryl, or an alkyl, cycloalkyl, aryl, alkylaryl, arylalkyl, or heteroaryl group substituted with 1 to 4 hydrophilic groups selected from hydroxy, alkoxy, -$C(O)OR^5$, -SOR^6, -SO_2R^6, nitro, amido, ureido, carbamato, -SR^7, -NR^8R^9, or poly-alkyleneoxide; or a substituent represented by the following formula:

$$—X——(CR^1R^2)_r——Z \qquad (2)$$

provided that at least ~~one~~ four of ~~Y^1, Y^2, Y^3, and Y^4~~ $(Y^1)_a$, $(Y^2)_b$, $(Y^3)_c$, and $(Y^4)_d$ ~~represents~~ are represented by formula (2);

X is oxygen or sulfur;

R^1, R^2, R^5, R^6, R^7, R^8, and R^9 are independently selected from hydrogen and C_1 to C_4 alkyl;

Z is a carborane cluster comprising at least two carbon atoms and at least three boron atoms, or at least one carbon atom and at least five boron atoms, within a cage structure;

r is 0 or an integer from 1 to 20;

W^1, W^2, W^3, and W^4 are hydrophilic groups independently selected from hydroxy, alkoxy, $-C(O)OR^5$, $-SOR^6$, $-SO_2R^6$, nitro, amido, ureido, carbamato, $-SR^7$, $-NR^8R^9$, or polyalkylene oxide;

a, b, c, and d independently represent an integer from 1 to 4;

m, n, p, and q are independently 0 or an integer from 1 to 4;

provided that at least one of m, n, p, and q is not zero, and each of the sums a + m, b + n, c + p, and d + q, independently represents an integer from 1 to 5; and

M is either two hydrogen ions; a single monovalent metal ion; two monovalent metal ions; a divalent metal ion; a trivalent metal ion; a tetravalent metal ion; a pentavalent metal ion; a hexavalent metal ion; a radioactive metal ion useful in radioisotope-mediated radiation therapy or imageable by single photon emission computed tomography (SPECT) or positron emission tomography (PET); a paramagnetic metal ion detectable by magnetic resonance imaging (MRI); a metal ion suitable for boron neutron capture therapy (BNCT) or photodynamic therapy (PDT); or a combination thereof; wherein ~~the porphyrin-metal complex derived from~~ when M is a single monovalent metal ion, the compound is charge-balanced by a counter cation~~,~~ ; and ~~the porphyrin-metal complex derived from~~ when M is a trivalent, tetravalent, pentavalent, or hexavalent metal ion, the compound is charge-balanced by an appropriate number of counter anions, dianions, or trianions.

2. (Original) The compound according to claim 1 wherein Z is selected from the carboranes $-C_2HB_9H_{10}$ or $-C_2HB_{10}H_{10}$, wherein $-C_2HB_9H_{10}$ is *nido* ortho-, meta-, or para-carborane, and $-C_2HB_{10}H_{10}$ is *closo* ortho-, meta-, or para-carborane.

3. (Original) The compound according to claim 1, wherein M is vanadium, manganese, iron, ruthenium, technetium, chromium, platinum, cobalt, nickel, copper, zinc, germanium, indium, tin, yttrium, gold, barium, tungsten, or gadolinium.

4. (Currently Amended) The compound according to claim 1 wherein a, b, c, and d are 1, and Y^1, Y^2, Y^3, and Y^4 are represented by ~~$-X-(CR^1R^2)_r-Z$ (2)~~ $-X-(CR^1R^2)_r-Z$ (2).

5. (Original) The compound according to claim 4 wherein Z is selected from the carboranes $-C_2HB_9H_{10}$ or $-C_2HB_{10}H_{10}$, wherein $-C_2HB_9H_{10}$ is *nido* ortho-, meta-, or para-carborane, and $-C_2HB_{10}H_{10}$ is *closo* ortho-, meta-, or para-carborane.

6. (Original) The compound according to claim 5, wherein M is vanadium, manganese, iron, ruthenium, technetium, chromium, platinum, cobalt, nickel, copper, zinc, germanium, indium, tin, yttrium, gold, barium, tungsten, or gadolinium.

7. (Original) The compound according to claim 6, wherein X is O; R^1 and R^2 are H; r is 1; and m, n, p and q are each 1.

8. (Original) The compound according to claim 7 wherein Y^1, Y^2, Y^3, and Y^4 are in the para position on the phenyl ring, and W^1, W^2, W^3, and W^4 are independently, hydroxy or alkoxy groups.

9. (Original) The compound according to claim 8 wherein W^1, W^2, W^3, and W^4 are alkoxy groups.

10. (Original) The compound according to claim 9 wherein the alkoxy groups are methoxy groups.

11. (Original) The compound according to claim 10 wherein the methoxy groups are in the meta position of the phenyl ring.

12. (Original) The compound according to claim 8 wherein W^1, W^2, W^3, and W^4 are hydroxy groups.

13. (Original) The compound according to claim 10 wherein the hydroxy groups are in the meta position of the phenyl ring.

14. (Currently Amended) ~~The~~ A method of imaging a tumor and surrounding tissue in a subject comprising the administration to the subject of a composition comprising a compound according to claim ~~1~~ 30; and ~~the imaging of said subject~~ observing the metal ion in the subject, thereby imaging the tumor and surrounding tissue.

15. (Currently Amended) A method of imaging a tumor and surrounding tissue in a subject comprising the administration to the subject of a composition comprising a compound according to claim ~~11~~ 31; and ~~the imaging of said subject~~ observing the metal ion in the subject, thereby imaging the tumor and surrounding tissue.

16. (Currently Amended) A method of imaging a tumor and surrounding tissue in a subject comprising the administration to the subject of a composition comprising a compound according to claim ~~13~~ 32; and ~~the imaging of said subject~~ observing the metal ion in the subject, thereby imaging the tumor and surrounding tissue.

17. The method according to any of claims 14, 15, or 16 wherein said imaging is by a method selected from magnetic resonance imaging (MRI), single photon emission computed tomography (SPECT), or positron emission tomography (PET) methods.

18. (Original) A method of bimodal cancer treatment in a subject comprising the administration to the subject of a composition comprising a compound according to claim 1; and the irradiation of said subject.

19. (Original) A method of bimodal cancer treatment in a subject comprising the administration to the subject of a composition comprising a compound according to

claim 11; and the irradiation of said subject.

20. (Original) A method of bimodal cancer treatment in a subject comprising the administration to the subject of a composition comprising a compound according to claim 13; and the irradiation of said subject.

21. (Original) The method according to any of claims 18, 19, or 20 wherein said irradiation is by a method utilizing thermal or epithermal neutrons, or laser red light.

22. (Original) The method according to any of claims 18, 19, or 20 wherein said bimodal cancer treatment comprises boron neutron capture therapy (BNCT).

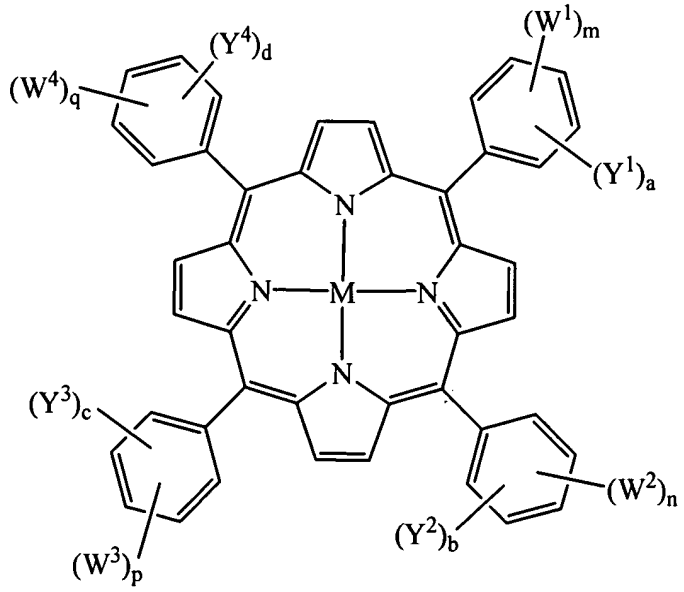
23. (Original) The method according to any of claims 18, 19, or 20 wherein said bimodal cancer treatment comprises photodynamic therapy (PDT).

24. (Original) The method according to any of claims 18, 19, or 20 wherein said bimodal cancer treatment utilizes single photon emission computed tomography (SPECT) or positron emission tomography (PET) wherein M is a SPECT- and/or PET-imageable radioactive metal ion.

25. (Original) The method according to any of claims 18, 19, or 20 wherein said bimodal cancer treatment utilizes magnetic resonance imaging (MRI) wherein M is a paramagnetic metal ion.

26-27. (Cancelled)

28. (New) A compound of the formula



(1)

wherein:

Y^1, Y^2, Y^3, and Y^4, are independently on the ortho, meta or para position on the phenyl rings, and are independently hydrogen, alkyl, cycloalkyl, aryl, alkylaryl, arylalkyl, heteroaryl, or an alkyl, cycloalkyl, aryl, alkylaryl, arylalkyl, or heteroaryl group substituted with 1 to 4 hydrophilic groups selected from hydroxy, alkoxy, -$C(O)OR^5$, -SOR^6, -SO_2R^6, nitro, amido, ureido, carbamato, -SR^7, -NR^8R^9, or poly-alkyleneoxide; or a substituent represented by the following formula:

$$—X——(CR^1R^2)_r——Z \qquad (2)$$

provided that at least four of $(Y^1)_a$, $(Y^2)_b$, $(Y^3)_c$, and $(Y^4)_d$ are represented by formula (2);

X is oxygen or sulfur;

R^1, R^2, R^5, R^6, R^7, R^8, and R^9 are independently selected from hydrogen and C_1 to C_4 alkyl;

Z is a carborane cluster comprising at least two carbon atoms and at least three boron

atoms, or at least one carbon atom and at least five boron atoms, within a cage structure;

r is 0 or an integer from 1 to 20;

W^1, W^2, W^3, and W^4 are hydrophilic groups independently selected from hydroxy, alkoxy, $-C(O)OR^5$, $-SOR^6$, $-SO_2R^6$, nitro, amido, ureido, carbamato, $-SR^7$, $-NR^8R^9$, or polyalkylene oxide;

a, b, c, and d independently represent an integer from 1 to 4;

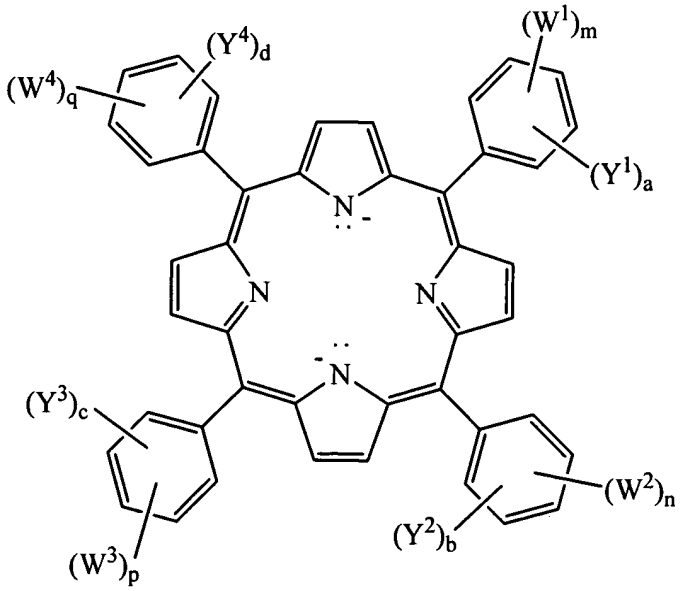
m, n, p, and q are independently 0 or an integer from 1 to 4;

provided that at least one of m, n, p, and q is not zero, and each of the sums a + m, b + n, c + p, and d + q, independently represents an integer from 1 to 5;

M is a trivalent, tetravalent, pentavalent, or hexavalent metal ion; and

wherein the porphyrin-metal complex is charge-balanced by one or more porphyrin compounds containing a divalent negative charge.

29. (New) The compound according to claim 28 wherein said one or more porphyrin compounds containing a divalent negative charge are represented by the formula



wherein:

Y^1, Y^2, Y^3, and Y^4, are independently on the ortho, meta or para position on the phenyl rings, and are independently hydrogen, alkyl, cycloalkyl, aryl, alkylaryl, arylalkyl, heteroaryl, or an alkyl, cycloalkyl, aryl, alkylaryl, arylalkyl, or heteroaryl group substituted with 1 to 4 hydrophilic groups selected from hydroxy, alkoxy, -$C(O)OR^5$, -SOR^6, -SO_2R^6, nitro, amido, ureido, carbamato, -SR^7, -NR^8R^9, or poly-alkyleneoxide; or a substituent represented by the following formula:

$$—X——(CR^1R^2)_r——Z \qquad (2)$$

provided that at least four of $(Y^1)_a$, $(Y^2)_b$, $(Y^3)_c$, and $(Y^4)_d$ are represented by formula (2);

X is oxygen or sulfur;

R^1, R^2, R^5, R^6, R^7, R^8, and R^9 are independently selected from hydrogen and C_1 to C_4 alkyl;

Z is a carborane cluster comprising at least two carbon atoms and at least three boron atoms, or at least one carbon atom and at least five boron atoms, within a cage structure;

r is 0 or an integer from 1 to 20;

W^1, W^2, W^3, and W^4 are hydrophilic groups independently selected from hydroxy, alkoxy, $-C(O)OR^5$, $-SOR^6$, $-SO_2R^6$, nitro, amido, ureido, carbamato, $-SR^7$, $-NR^8R^9$, or polyalkylene oxide;

a, b, c, and d independently represent an integer from 1 to 4;

m, n, p, and q are independently 0 or an integer from 1 to 4; and

provided that at least one of m, n, p, and q is not zero, and each of the sums a + m, b + n, c + p, and d + q, independently represents an integer from 1 to 5.

30. (New) A compound according to claim 1, wherein M is either a single monovalent metal ion; two monovalent metal ions; a divalent metal ion; a trivalent metal ion; a tetravalent metal ion; a pentavalent metal ion; a hexavalent metal ion; a radioactive metal ion useful in radioisotope-mediated radiation therapy or imageable by single photon emission computed tomography (SPECT) or positron emission tomography (PET); a paramagnetic metal ion detectable by magnetic resonance imaging (MRI); a metal ion suitable for boron neutron capture therapy (BNCT) or photodynamic therapy (PDT); or a combination thereof; wherein when M is a single monovalent metal ion, the compound is charge-balanced by a counter cation; and when M is a trivalent, tetravalent, pentavalent, or hexavalent metal ion, the compound is charge-balanced by an appropriate number of counter anions, dianions, or trianions.

31. (New) A compound according to claim 11, wherein M is either a single monovalent metal ion; two monovalent metal ions; a divalent metal ion; a trivalent metal ion; a tetravalent metal ion; a pentavalent metal ion; a hexavalent metal ion; a radioactive metal ion useful in radioisotope-mediated radiation therapy or imageable by single photon emission computed tomography (SPECT) or positron emission tomography (PET); a paramagnetic metal ion detectable by magnetic resonance imaging (MRI); a metal ion suitable for boron neutron capture therapy (BNCT) or photodynamic therapy (PDT); or a combination thereof; wherein when M is a single monovalent metal ion, the compound is charge-balanced by a counter cation; and

when M is a trivalent, tetravalent, pentavalent, or hexavalent metal ion, the compound is charge-balanced by an appropriate number of counter anions, dianions, or trianions.

32. (New) A compound according to claim 13, wherein M is either a single monovalent metal ion; two monovalent metal ions; a divalent metal ion; a trivalent metal ion; a tetravalent metal ion; a pentavalent metal ion; a hexavalent metal ion; a radioactive metal ion useful in radioisotope-mediated radiation therapy or imageable by single photon emission computed tomography (SPECT) or positron emission tomography (PET); a paramagnetic metal ion detectable by magnetic resonance imaging (MRI); a metal ion suitable for boron neutron capture therapy (BNCT) or photodynamic therapy (PDT); or a combination thereof; wherein when M is a single monovalent metal ion, the compound is charge-balanced by a counter cation; and when M is a trivalent, tetravalent, pentavalent, or hexavalent metal ion, the compound is charge-balanced by an appropriate number of counter anions, dianions, or trianions.